

WHAT IS CLAIMED IS:

1. An anti-vibration apparatus comprising:
a first magnet unit arranged on a support target
and including a first permanent magnet; and
5 a second magnet unit including a pair of second
permanent magnets, said pair of second permanent
magnets being arranged to interpose said first
permanent magnet in noncontact with said first
permanent magnet such that same magnetic poles of said
10 first and second permanent magnet oppose each other,
wherein sizes of said first and second magnet
units are set such that no force acts between said
first and second magnet units in a relative position
range between said first and second magnet units in a
15 direction perpendicular to a direction in which said
first magnet unit supports the support target.
2. The apparatus according to claim 1, wherein the
size of said first permanent magnet is smaller than
those of said pair of second permanent magnets in a
20 direction perpendicular to the support direction and
the opposing direction.
3. The apparatus according to claim 1, wherein said
second magnet unit includes a yoke for said pair of
second permanent magnets, and the sizes include a size
25 of said yoke.
4. The apparatus according to claim 1, further
comprising an electromagnetic actuator for generating a

force which acts on the support target.

5. The apparatus according to claim 1, wherein said second magnet unit includes a changing unit which changes area through which said pair of second
5 permanent magnets oppose said first permanent magnet.

6. The apparatus according to claim 5, wherein said changing unit changes the area based on a position of an object on the support target.

7. A device manufacturing apparatus comprising an
10 anti-vibration apparatus defined in claim 1.

8. An exposure apparatus for exposing a substrate to a pattern, said apparatus comprising an anti-vibration apparatus and a support target defined in claim 1.

9. The apparatus according to claim 8, wherein at
15 least one of a stage for a reticle, a stage for a substrate to be exposed, and a system which projects the pattern is arranged on said support target.

10. The apparatus according to claim 8, wherein said exposure apparatus is arranged in a vacuum chamber.

20 11. A device manufacturing method comprising a step of using an anti-vibration apparatus defined in claim 1.

12. A device manufacturing method comprising a step of exposing a substrate to a pattern using an exposure apparatus defined in claim 8.

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